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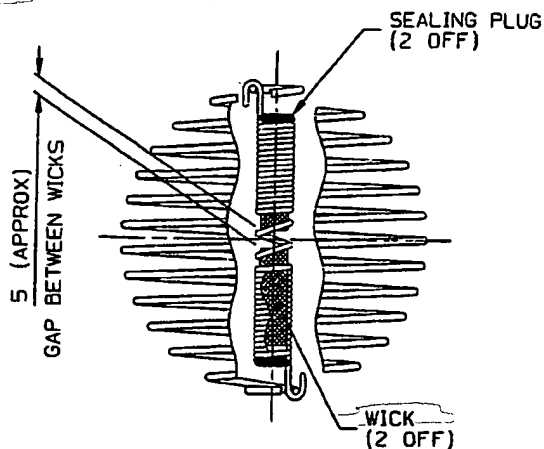
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(58) Field of Search

UK CL (Edition M) A6M MFC MFX, A6S S38X  
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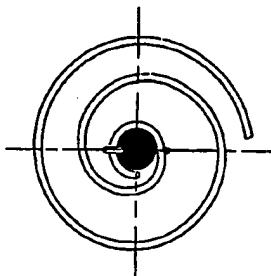
(54) Jugglersfireball'

(57) A juggling piece comprises a hollow body formed from heat resisting material, and a flame generating means releasably mounted within the hollow body so that the flame can be seen.



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UNLESS OTHERWISE STATED

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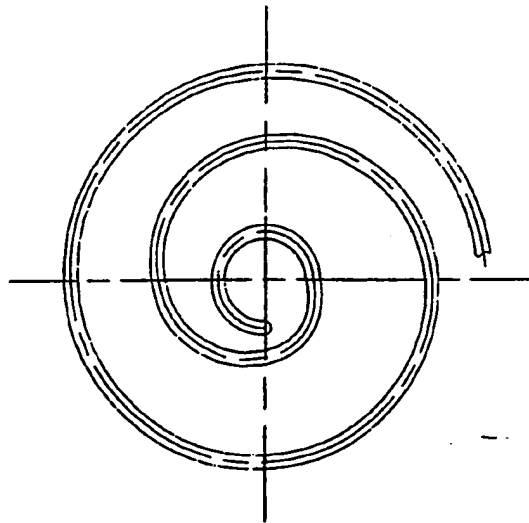
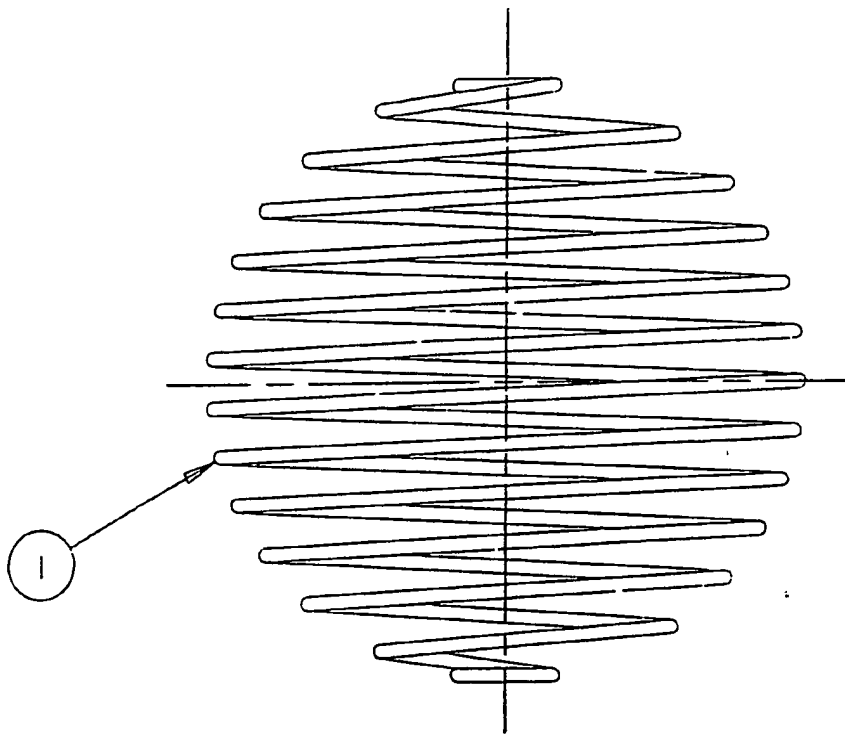


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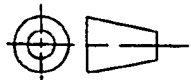
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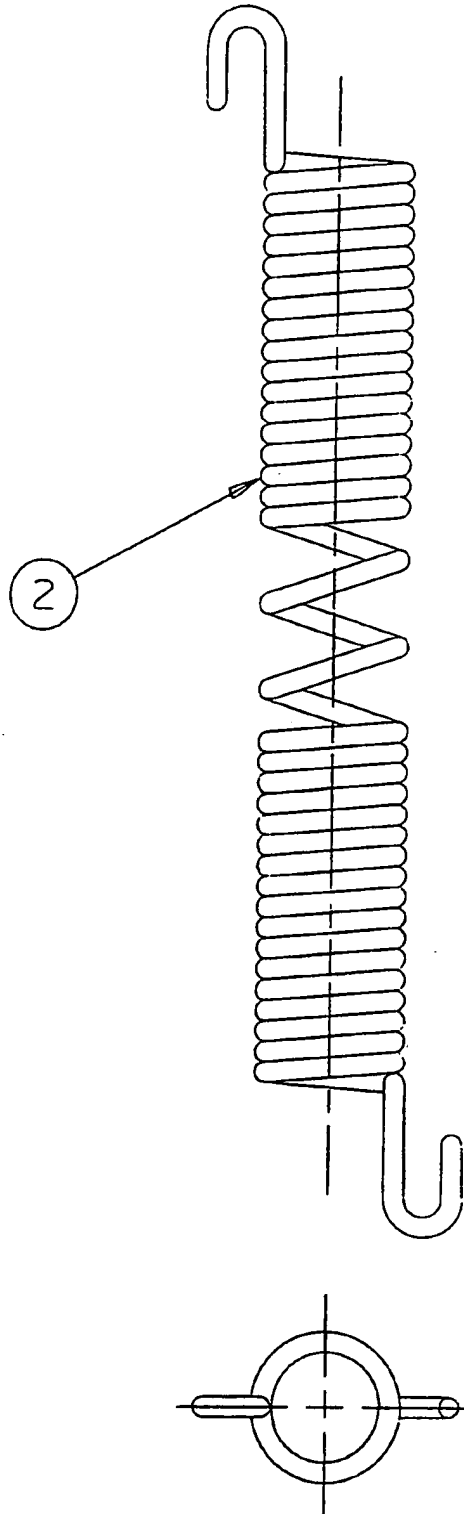


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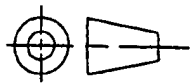


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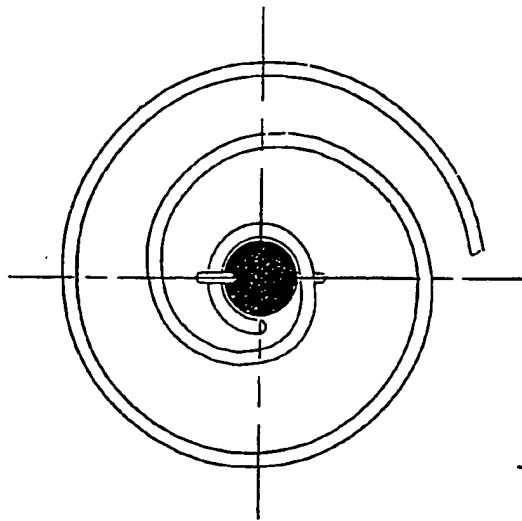
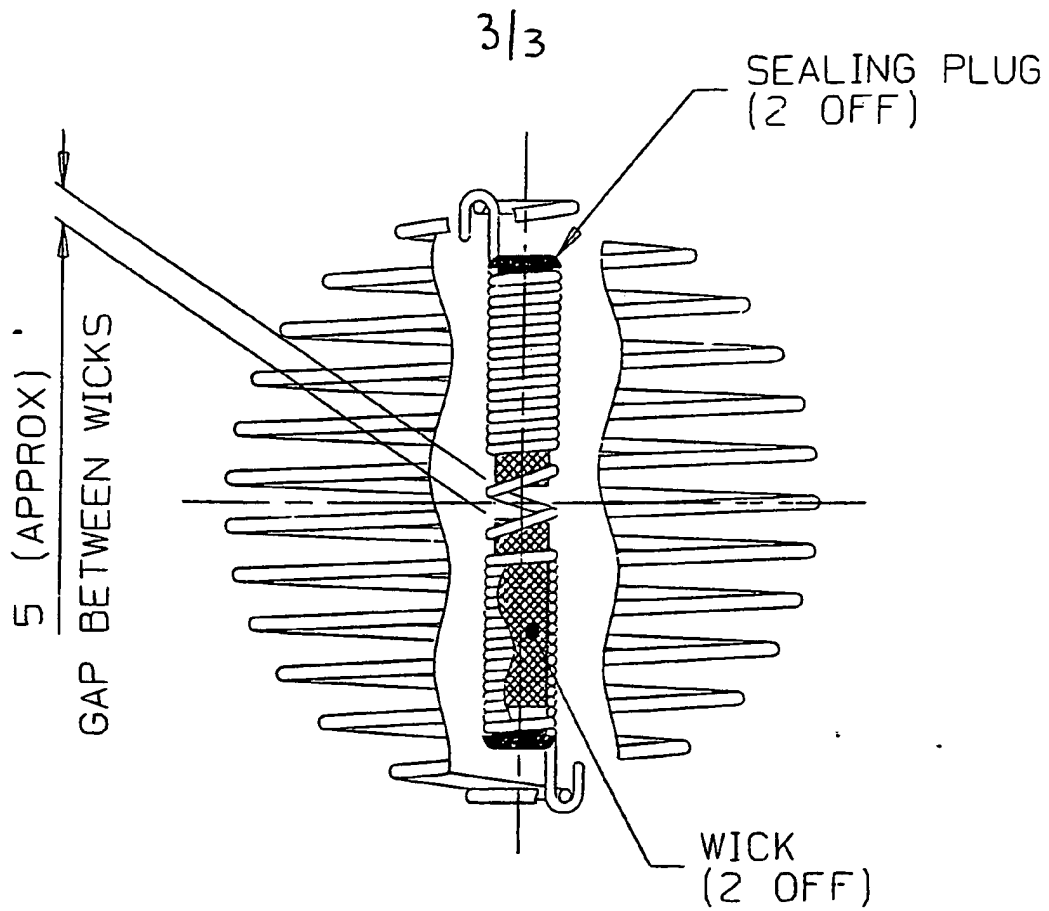
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COMBINATION  
SPRING



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SPRING  
ASSY

## Juggling Fireball.

### 1.0 Introduction.

In accordance with the present invention, there is provided a juggling piece comprising a hollow body formed from heat resisting material, and a flame generating means mounted within the hollow body.

1.1 The body contains apertures to allow free circulation of air between the interior and exterior thereof and to allow the flame to be seen from the exterior.

1.2. The juggling piece is preferably spherical in shape and the heat conducting material of the body is preferably a metal. Most preferably, a spherical body is formed by somewhat loosely winding a metal section into a helix in such a way that the overall appearance is spherical. The pitch of the helix being relatively large, to create a gap between each adjacent turn of the helix, so providing the apertures according to the invention.

1.3. To maintain the shape of the spherical body and to provide a support for the flame generating means, the poles of the sphere are preferably internally connected by a cross member, which may suitably comprise a combination compression and tension spring of relatively constant and relatively small diameter.

1.4. The flame/s generating means are preferably arranged to generate a flame/s in the approximate ~~centre of the hollow~~ body. Typically there may be provided one or more wicks or means of sustaining the flame. Fuel for the flame/s is provided by one or two ~~fuel reservoirs~~ connected to the wick/s.

1.5. In a preferred arrangement the two reservoirs each in the form of a liquid absorbent material are incorporated within the combination spring in such a way that only the end of each pad near the centre of the body is exposed to the air, that end part thereby functioning as the wick means integral with the reservoir. In more detail, the winding of the combination spring themselves can cover the remainder of the surfaces of each absorbent pad in an air tight manner, to ensure combustion takes place in a controlled manner only at the central wick end of each pad, and an end cap can be placed over the radially outer end of each pad to prevent combustion occurring at those ends.

1.6 The flame generating means are suitably arranged within the body interior in such a way that burning of the fuel does not significantly displace the centre of gravity of the juggling piece. The nature and amount of the heat conducting material used in the body is selected having regard to the strength of the internal flame/s to ensure that no part of the body that the juggler needs to touch reaches a temperature that would be intolerable to the jugglers during the maintenance and act of juggling.

1.7. For ease of understanding the embodiment of the invention will now be described without limitation and purely to describe by way of example with reference to the accompanying drawing, in which,

1.8. There is provided a hollow body contains apertures to allow free circulation of air between the interior and exterior thereof and to allow the flame to be seen from the exterior.

1.9. The juggling piece is preferably spherical in shape and the heat conducting material of the body is preferably a metal. Most preferably, a metal wire or metal mesh, or metal sectioned spherical body is formed by somewhat loosely winding a metal section into a helix in such a way that the overall appearance is spherical. The pitch of the helix being relatively large, to create a gap between each adjacent turn of the helix, so providing the apertures according to the invention.

1.10. To maintain the shape of the spherical body and to provide a support for the flame generating means, the poles of the sphere are preferably internally connected by a cross member, which may suitably comprise a combination compression and tension spring of constant and relatively small diameter.

1.11. The flame generating means are preferably arranged to generate a flame in the approximate centre of the hollow body. Typically there may be provided one or more wicks or means of sustaining the flame/s. Fuel for the flame/s is provided by one or two fuel reservoirs connected to the wick/s.

## 2.0 Background.

Jugglers and circus entertainers have over thousands of years used naked flame and fire as a medium to heighten the effect of the particular routine, or trick being performed. A typical example being the juggling of clubs which have been set alight with an inflammable liquid.

2.1. A number of attempts have been made to produce a juggling ball which could be set alight/aflame by use of inflammable liquids.

2.2. Previous proposals have mainly centered around the use of either tennis balls or conventional juggling balls manufactured from plastic or cloth materials. Such balls were soaked in an inflammable liquid, ie, paraffin, oils, or white spirit, prior to being set alight.

2.3. Juggling with this type of ball described in Paragraph 2.2. has brought the jugglers hands into immediate and direct contact with the flame of fire. The juggling of such balls has only been possible by the juggler wearing protective gloves and or protective clothing.

2.4 Gloves fail either do provide the necessary protection, or remove the sense of "feel" necessary when more complex juggling tricks are being performed.

2.5 Additionally, as traditional juggling balls are made from inflammable materials the result of setting the juggling ball aflame has been the destruction of the juggling ball.

2.6 The production of a flame/s using inflammable liquids has been accepted by jugglers as providing a large quantity of illuminating light.

2.7 The most common inflammable liquids used by jugglers are paraffin, or white spirit, being readily available and inexpensive.

2.8 Certain previous proposals have also avoided the use of a naked flame. In these proposals illumination of the juggling ball has been achieved by incorporating an electrical power source, ie battery or accumulator, which powered an light source. The illumination effect provided by such devices has been considered insufficient.

2.8 Jugglers also drop balls both accidentally and intentionally during a juggling display. Juggling balls illuminated electronically have failed to withstand the mechanical loads and mechanical damage resulting from the act of juggling.

2.9 Additionally electronic illuminated juggling balls have been relatively expensive to manufacture when compared against traditional juggling balls manufactured from fabrics

2.11 Previous proposals have required protective clothing/cloves to be worn during the act of juggling balls which have been set alight/aflame.



2.12. Additionally and specifically the juggling of balls constructed from fabrics has resulted in the ball's destruction when set alight/aflame.

2.13 Other attempts have centered around wooden juggling balls wrapped with wick.

2.14 Previous proposals have not enabled balls, set alight and having a naked flame as their source of illumination to be juggled without exposing the participant juggler to serious risk of burns.

2.15 Previous proposals have been manufactured from inflammable materials, ie, cloth, rubber or wood, posing considerable fire risk to individuals and property.

### 3.1 TECHNICAL FEATURES

The embodiment of this invention is a hollow fire proof spherical shape allowing clear and unhindered sight of a naked flame and which can be held in the unprotected hand.

3.2 A rapid temperature difference is the driving force by which heat is transferred from the source (juggling ball) to the receiver (the surrounding air).

3.3 Specifically the construction of the sphere serves to act as a guard, preventing parts of the body and specifically the jugglers hands coming into direct contact with the naked flame contained in the centre of the sphere..

3.4 The construction allows clear and unhindered sight of the illuminating flame/s

3.5 Accordingly one aspect of the present invention is the metal construction allows heat energy, resulting from the impregnment of the flame on the surface of the sphere, to be dissipated by thermal convection currents.

3.6 Additionally the construction allows for uniform heat dissipation by both thermal conduction and thermal radiation currents throughout the sphere.

3.7 Specifically the present proposal allows for the free and unhindered movement of fluid (cooling air) over the internal and external surfaces of the sphere.

3.8 According to yet another aspect of the present invention the uniform gaps in the construction permits a free flow of the cooling fluid (air) to pass around, into, and through the ball.

3.9 It will be appreciated that the metal construction of the sphere is to make it fire proof.

4.0 Manufacture of the sphere from metal permits accurate and reproducible weight control. Additionally and as a consequence of this invention production of a light weight sphere is provided for.

4.2 Specifically impact loads, and the potential and or subsequent damage to the metal sphere caused or resulting from the deliberate or accidental dropping of the sphere are dampened by the elastic properties of the helix construction.

4.4 The present invention incorporates a combination compression and tension spring, Drawing no 2/3 Combination Spring which is fastened in position between the poles of the sphere as shown in the assembly drawing no 3/3.

4.5 Certain purposes and functions of the combination compression and tension spring are as follows.

4.6 ~~Is to serve as a fuel reservoir~~ for the inflammable liquid, which when set alight, illuminates the sphere.

4.7 A further and quite specifically feature of the present invention is to position two independent circular cross sectioned wicks in the centre of the sphere, thus providing for the maintenance of a uniform distance to the outer envelope of the sphere.

4.8 As a consequence of positioning the circular wicks centrally within the sphere, equal and uniform heat dissipation occurs in all directions.

4.9 The combination spring, drawing no 2/3, allows for the insertion of wicks through the open ends of the coils. After the wicks are inserted into both ends of the combination spring, the ends of the combination spring are sealed with two plugs as shown on drawing no 3/3 item 4.

4.10 The internal dimensions of the combination spring are such as to secure and firmly grip the two circular wicks.

4.11. A result of the construction of the combination spring is to exclude the air, necessary to maintain combustion, from the non-exposed surfaces of the two circular wicks. Exclusion of air prevents the flame from spreading along the two circular wick. Accordingly and in consequence a uniform and stable flame is maintained.

4.12. Whilst the two circular wicks burn and function entirely independently, they function collectively to support the maintenance of a uniform and stable flame of a maximum and constant size.

#### Drawing List.

Drawing No 1/3. shows the spirally wound wire spring in the side elevation.

Drawing No 1/2. shows the combination spring in side elevation.

Drawing No 1/3. shows the spring assembly, sectioned and in side elevation to feature the combination spring enclosing two separate wicks.

CLAIMS

1. A hollow juggling ball in the form of a loosely wound metal wire spherical helix comprising at least one releasable fuel storage reservoir secured to the body of the juggling ball, the fuel reservoirs being adapted to contain wicks which when ignited allows clear sight of at least one naked flame from the exterior.
2. A hollow juggling ball as claimed in Claim 1 wherein means are provided to prevent direct contact with the source of the flame.
3. A hollow juggling ball as claimed in Claim 1 or Claim 2 which when set aflame by means of the liquid-fuel absorbent wicks contained within the fuel storage reservoirs can be held by a bare unprotected hand.
3. A hollow juggling ball as claimed in Claim 1 or Claim 2 or Claim 3 wherein means are provided to replace the fuel storage reservoirs.
4. A hollow juggling ball as claimed in any preceding claim wherein means are provided to refuel or to replace the liquid -fuel absorbent wick.
5. A hollow juggling ball as claimed in all preceding claims which maintains its shape by an internally connected cross member

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**(The Search report)**

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**Relevant Technical Fields**

(i) UK Cl (Ed.M) A6M (MFC, MFX); A6S (S38X)

(ii) Int Cl (Ed.5) A63J 7/00, 21/00

Search Examiner  
A T BLUNT

Date of completion of Search  
19 JANUARY 1994

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Documents considered relevant following a search in respect of Claims :-  
1-5

**Categories of documents**

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| <p><b>X:</b> Document indicating lack of novelty or of inventive step.</p> <p><b>Y:</b> Document indicating lack of inventive step if combined with one or more other documents of the same category.</p> <p><b>A:</b> Document indicating technological background and/or state of the art.</p> | <p><b>P:</b> Document published on or after the declared priority date but before the filing date of the present application.</p> <p><b>E:</b> Patent document published on or after, but with priority date earlier than, the filing date of the present application.</p> <p><b>&amp;:</b> Member of the same patent family; corresponding document.</p> |
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Category	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

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